BIOTOPE INFORMATION SHEET

English name: **Baltic photic muddy sediment or sand dominated by spiny naiad (*Najas marina*)**		Code in HELCOM HUB: **AA.H1B5, AA.J1B5**	
Characteristic species: *Najas marina,* Charales often co-occur			
Past and Current Threats (Habitat directive article 17): Eutrophication (H01.05), Construction (dredging J02.02, dykes, embankments and artificial beaches J02.12), Ditching (J02.01), Other threat factors (aquaculture F01)		Future Threats (Habitat directive article 17): Eutrophication (H01.05), Construction (dredging J02.02, dykes, embankments and artificial beaches J02.12), Ditching (J02.01), Other threat factors (aquaculture F01), Climate change (M02)	
Red List Criteria: **A1**	Confidence of threat assessment: **L (AA.J1B5), M(AA.H1B5)**	**HELCOM Red List Category:**	**NT Near Threatened**
Previous HELCOM Red List threat assessments			
BSEP 75 (HELCOM 1998): "2" Heavily endangered 2.5.2.2 Sublittoral sand bottoms dominated by macrophyte vegetation "3" Endangered 2.5.2.1. Sublittoral level sandy bottoms with little or no macrophyte vegetation of the photic zone 2.5.2.4 Sand banks of the sublittoral photic zone with or without macrophyte vegetation 2.5.3.1 Hydrolittoral level sandy bottoms with little or no macrophyte vegetation 2.5.3.2 Hydrolittoral level sandy bottoms dominated by macrophyte vegetation 2.5.3.4 Hydrolittoral sand banks with or without macrophyte vegetation 2.7.2.1 Sublittoral muddy bottoms with little or no macrophyte vegetation of the photic zone 2.7.2.2 Sublittoral muddy bottoms dominated by macrophyte vegetation 2.7.3.1 Hydrolittoral muddy bottoms with little or no macrophyte vegetation 2.7.3.2 Hydrolittoral muddy bottoms dominated by macrophyte vegetation		BSEP 113 (HELCOM 2007): Macrophyte meadows and beds are under threat and/or in decline everywhere, where they occur.	
Greater concern stated by:			

Habitat and Ecology

The biotope is characterized by the submerged rooted aquatic angiosperm *Najas marina* (spiny naiad also known as holly-leaved water nymph), which forms at least 50% biovolume of the vegetation. The biotope is distributed on muddy and sandy sediments of the photic zone. Beside the dominant species *Najas marina*, several charophytes such as *Chara aspera* or *Chara tomentosa* and other higher plants such as *Stukenia pectinata* may coexist (Berg et al. 2004).

The species occurs widely in freshwater and brackish environments all over Europe (Preston & Croft 1997). Compared to Charales-biotopes, the distribution of the biotope dominated by spiny naiad is more

strictly restricted to bays and coastal lagoons. The distribution range within the bays give evidence that the biotope is even more sensitive to exposure than charophytes, preferring extremely sheltered conditions. Suitably sheltered bays are often shallow. In Great Britain (Preston & Croft 1997) and the Southern Baltic Sea (Selig et al. 2007b) *N. marina* stands were observed to favour lower phosphorus concentrations than other benthic macrophytes, which highlights a high sensitivity to eutrophication. *Najas marina* requires good light conditions.

Herbarium specimen of *Najas marina* (Photo: Karin Fürhaupter, MariLim GmbH)

Like charophytes, *Najas marina* can also easily become overgrown by ephemeral algae having a similar effect on the biotope (breakdown of stands). Sessile animals are seldom found attached to the plant but grazing snails, insects and mobile amphipods occur typically in the spiny naiad biotope. The inhabiting communities are similar to the Charales biotopes in comparable salinities.

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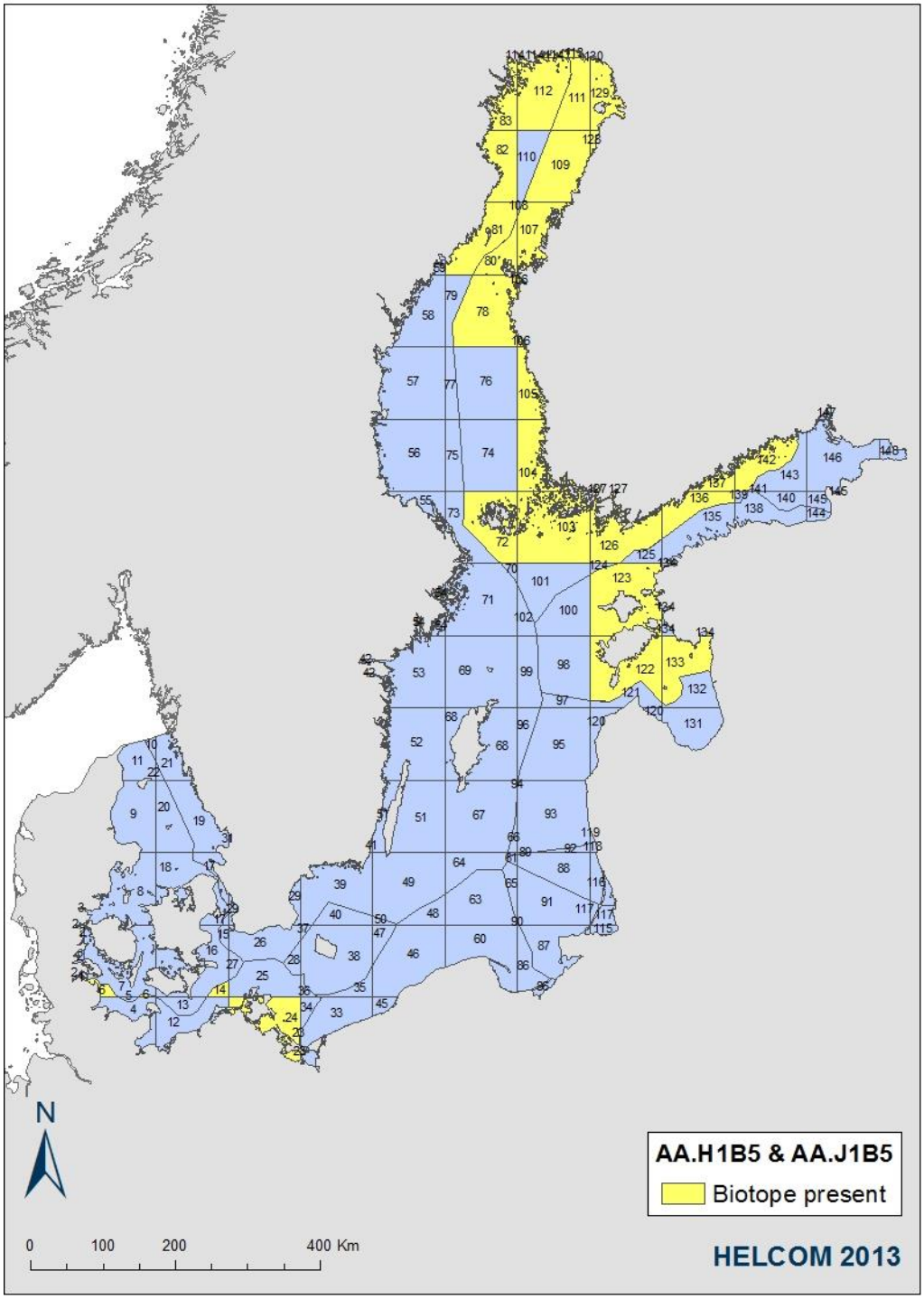
Distribution and status in the Baltic Sea region

The *Najas* biotopes are distributed along the whole Baltic Sea coastline. Especially some very sheltered, oligohaline German Boddens, the Puck, Vistula and Curonian Lagoon, as well as Finnish and Swedish flads and glo-flads are typical localities where the biotope occurs. The distribution map indicates the area in the 100 x 100 km grid where biotope is known to occur.



BIOTOPE INFORMATION SHEET

Description of Major threats

Observed declines of the spatial distribution of the spiny naiad biotopes are mainly caused by increased eutrophication and its connected impacts/threats. Decreased light penetration depth, massive growth of ephemerals and increased sedimentation/siltation cause massive alteration in the habitat conditions of sheltered coastal zones. The enclosed characteristic of bays and lagoons intensify the eutrophication threats.

Coastal constructions (ditching, deepening of harbour access channels, leisure facilities and physical disturbance due to increased tourism has led to a further degradation of the biotope. The threat level is particularly high in the Southern Baltic Sea (OCEANA 2011). In the future climate change (increasing exposure levels, temperatures) or increasing aquaculture in bays may cause additional threats.

Assessment justification

A1

According to Berglund et al. (2003), in the Åland Sea area *N. marina* was one of the rarest observed macrophyte species, with only 9% occurrence of the total 27 coastal localities studied. A comparison of the current with the historical distribution status of *Najas marina* within the German Bodden areas of Mecklenburg Western Pomerania (Southern Baltic Sea) resulted in a nearly total loss of the biotope. *Najas marin*a exists still with single specimens, but no high densities could be assessed (pers comm. K. Fürhaupter).

The biotope has exhibited a strong decline in the highly eutrophicated areas of the Southern Baltic Sea and it is even known to have disappeared. But in other Baltic Sea areas and in freshwater lakes this species is not known to be extremely sensitive to eutrophication. As the species forms several subspecies, this varying reaction may be caused by the distribution of different subspecies within the Baltic Sea area, but not enough data are available to support this assumption.

Recommendations for actions to conserve the biotope

Combatting local sources of eutrophication (mainly agriculture) as well as conservation measures, such as restrictions on coastal constructions and dredging, in shallow coastal lagoons and archipelago areas can prevent the biotope from further decline (HELCOM Website).

Common names

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References

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